

Dalhousie's Eco-Olympics: Gaining an Understanding to Participation

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1.0 Executive Summary

The following report highlights research completed on the influences behind student participation in Dalhousie's Eco-Olympics. The research group conducted both intercept as well as captive style questionnaires in order to obtain the opinions of those who have not yet participated in this competition, as well as those who have. Within these surveys, questions were designed to align with three topics surrounding participation: reasons behind lack of participation; communication tools; and the use of prizes and incentives.

Data was coded and analyzed in order to provide a discussion and generate recommendations on how to improve next year's competition, as well as recommendations on further research. Here, it was found that a lack of participation could be accredited to a lack of awareness of the competition. Within communication tools, the research pointed to posters as well as social media as being the most effective means of communication to increase awareness. Last, it was found that prize incentives are a positive way to increase participation in Dalhousie's Eco-Olympics, and other residence activities alike.

Further research is recommended in several areas. This will ensure that the information provided within this report will convert from exploratory to transformative – increasing participation in residence activities on Dalhousie's Campus while also achieving broader sustainability goals.

2.0 Introduction

The Dalhousie residence Eco-Olympics is a challenge designed by the Green Residence Forum to gain awareness of energy and water consumption patterns, sustainability issues, and to promote more environmentally friendly lifestyle choices through a residence competition. Every March, students in residences across campus compete against one another over a two-week period to see who can reduce energy and water consumption against their own baseline data (Dalhousie University, 2013a). The winning residence is the residence that achieves the greatest reduction in consumption compared to their baseline measurement (Dalhousie University, 2013b). The focus of our research was to attempt to understand the following:

"What influences student participation in the Dalhousie Residences Eco-Olympics?"

This question was explored by focusing on three main themes: reasons for student participation and lack of participation in competitions and activities, integrating incentives and the effects on participation rates, as well as effective means of communication campaigns for awareness. This research was intended to extract the opinions of those who have not yet participated in the Eco-Olympics, as well as those who have. The study was conducted during the months of February through April of 2013. Conclusions from the study will be beneficial in assisting the organizers of the Eco-Olympics. Suggestions may assist in creating a more comprehensive and interactive Eco-Olympics that first year students would be interested in getting involved with. It will also be useful in the application of promotional techniques, as well as establishing events that will increase student participation.

3.0 Background information and literature review

The residence Eco-Olympics is a relatively new sustainability initiative at Dalhousie University. In 2010, Gerard Hall won the first gold for their 5 per cent reduction in electricity and water consumption (Neuman, 2010). In proceeding years of the competition, reduction percentages decreased to about one per cent, across the board (Office of Sustainability, n.d.). While any reduction in the consumption of energy and water should always be commended, comparing these results to those in other regions of Atlantic Canada highlight how there is room for improvement at Dalhousie:

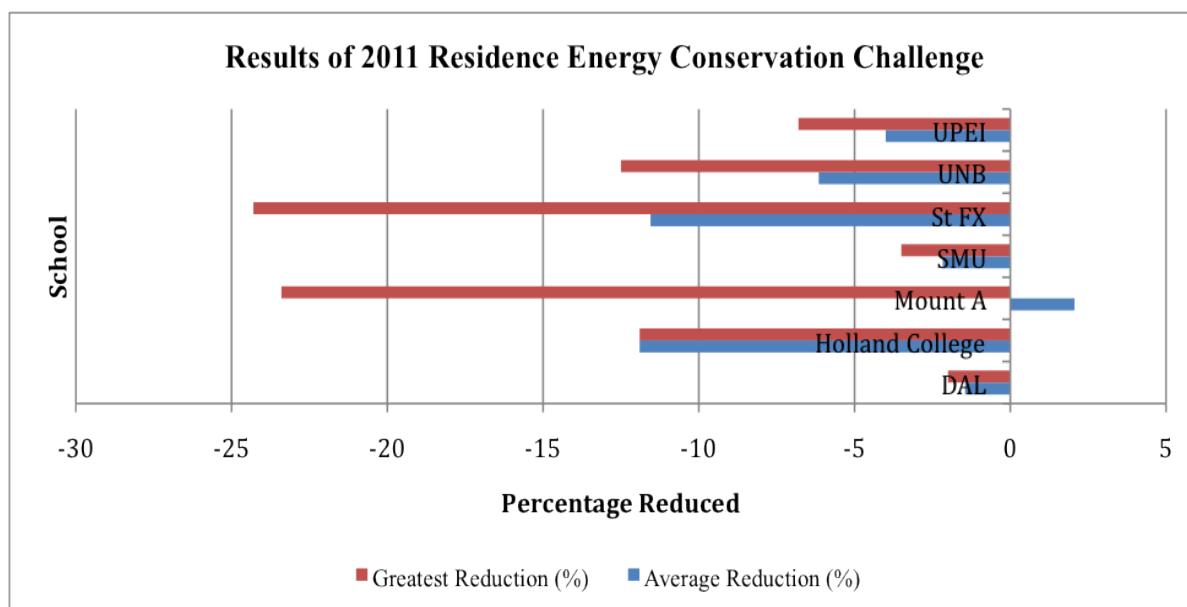


Figure 1 Energy consumption during reduction challenges. Comparisons are made between Saint Francis Xavier (St. FX), University of Prince Edward Island (UPEI), University of New Brunswick (UNB), Saint Mary's University (SMU), Mount Allison (Mount A.), Holland College, and Dalhousie University (DAL).

The figure above highlights the results from the Atlantic Energy Conservation Challenge from 2011 (University of Prince Edward Island, 2011). From this chart, it is clear to see that Dalhousie Residences, on average, have the smallest percentage of reduction as well as the smallest greatest reduction. One possible explanation for Dalhousie's poor reduction is the old infrastructure in Residences. However, as Figure 1 is not based on reduction from an overall average of all schools but instead a reduction in individual residences, it is fair to assume that the lack of reduction is strictly due to lack of involvement. Thus, Dalhousie has ample room for

improvement, and through research on this topic, Dalhousie can hopefully create a thriving Eco-Olympics.

3.1 Existing Literature

Existing literature on the nature of sustainability activities in post-secondary institutions that influence this project can be grouped into three categories. These include: reasons behind student participation in activities; effective means of communication to gain awareness; and measures of success.

3.1.1 Influences on Participation

When looking at the reasons behind participation in activities in post-secondary school residences, researchers have looked in two directions. This can be in a positive direction (factors that contribute to participation), as well as negative (factors that hinder participation). Thus far in the social science community there has been a lack of consensus behind the positive and negative influences on participation.

Some research has pointed to reasons behind the negative influences on participation. Savageau (2013) found that lack of student participation in sustainability activities was because of the timing of events. Here, it was discovered that with a student's busy schedule, and the stress placed on achieving high grades, students often prioritized academics over extracurriculars. This research was supported by Reardon and Cummings Bertoch (2010), who suggested that students will show higher motivation and levels of participation in programs that more directly relate to their program of study or their career goals.

A second negative influence on participation, as stated by Savageau (2013), is that many students admitted to giving little thought to their consumption and waste patterns, and that when confronted about these matters, students said the issues felt distant and overwhelming. Various researchers have found the shift from a family home to a university residence is difficult for many first-year students (Tierney, 1992; Martin, 2003; Mantere & Vaara, 2008, Franz-Balsen et al., 2007). Due to this culture shock, some students have a difficult time participating in activities that force a different ethic than what was previously promoted in their homes. Mantere and Vaara (2008) suggest that one way to ease this is by increasing the role that residence assistants (RAs) have in residence activities.

Additional barriers were highlighted by Zimmerman and Halfacre-Hitchcock (2006) in a study performed at the College of Charleston, North Carolina. Here, numerous influences behind the lack of participation in sustainability-oriented events in post-secondary institutions were uncovered. This included stereotypes associated with activism, lack of coordination among campus community, as well as lack of time to implement the project (Gilman, 2001; Reardon & Cummings Bertoch, 2010).

While the research outlined above points to very few commonalities between positive and negative influences behind student participation, Doug McKenzie-Mohr, an expert in community based social marketing (CBSM) refutes the majority of these points. He claims that none of the tactics above work for increasing participation in sustainability oriented activities (2000). Rather, his research has pointed to the idea that participation can be increased in several ways. This includes determining what motivates the population, alongside uncovering barriers and strategies through CBSM, as a key factor in influencing the mindset change towards participation in environmental activities (McKenzie-Mohr, 2000; Kennedy, 2010). CBSM may be seen in action in an experiment performed by Kennedy (2010) where it was determined that it enhanced environmental regulation in the general population when compared to the existing environmental regulations in place. The study focused on combining traditional legal instruments with behavioral change tools so as to guide a change in citizens in respect to their views on the environment. CBSM may be key in determining how to change the mindset of students in residence in order to increase participation in the Eco-Olympics.

3.1.2 Communication Tools

In the post-secondary school setting, there are often multiple tools that are used for communication. These range from posters and pamphlets to floor meetings. Research in post-secondary school cafeterias has pointed to posters as being one of the best communication tools for conveying sustainable activities (Whitehair et al., 2013; Kahler, 2003). In these studies, it was found that when posters with simple prompts for sustainability related lifestyle choices are placed in high visibility places of the cafeteria, students were more likely to be reminded of their beliefs and positively contribute to the activity. As opposed to using posters as the main communication tool, Sharp (2002), as cited in Franz-Balsen (2007), found that the top ways to communicate to students on campus was to maximize face-to-face communication and to update university websites frequently. Franz-Balsen (2007) also noted that a counter productive

communication tactic was to over-campaign students. Furthermore, they believe that something as simple as updating the university website is effective in communicating the message.

3.1.3 Success with the Inclusion of Feedback and Use of Prizes

In this study we aimed to identify specific methods of feedback and incentives that would motivate students to become more involved in participating in Eco-Olympics. The use of, or lack of, incentives was examined as to the promotion of participation. While there is ample existing literature on feedback and incentives on participation rates and success of a program, there is little consensus.

Research presented by Peterson et al., (2007) stated there were two main kinds of feedback that students reacted positively to. First, it was concluded that real-time web based feedback had a positive impact with getting students involved. Energy waste was monitored and it was found that students who had access to this information were 51% more likely to participate. This information was validated further by Zimmerman and Halfacre-Hitchcock (2006) who found that students are less inclined to participate when real-time updates of progress are absent. Second, Peterson et al., found that incentives (such as prizes) are a positive way to get students involved (2007).

From the scan of literature pertaining to post secondary sustainability initiatives, it is clear to see that many social scientists have conflicting views. This includes research within how to communicate, facilitate, and incentivize participation in 'green' activities. As a result, it is the goal of this project to find the context specific reasons on how the residence Eco-Olympics at Dalhousie University can be more successful within each of the three themes.

4.0 Statement of the goals and objectives of the project

There are several practical implications of this research study. First, from the results of the survey, the researchers will be able to synthesize what students living in Howe Hall deem as the most effective ways to increase involvement. While this research is intended to explain the reasons behind the lack of involvement in the Eco-Olympics, this same information can be applied to many activities, as questions in the survey are broad enough to cover multiple scenarios.

It is anticipated that this research will lead to a better understanding of how the Eco-Olympics are currently run, as well as how they can be improved in the future. By understanding the influences of participation, communication tactics, and desired success indicators that first year students have, those who facilitate the Eco-Olympics may be able to modify events and incentives to increase the effect seen from this competition. If suggestions for how participation in Eco-Olympics, or even participation in the events can be slightly improved from this study, then the researchers would deem this project to be a success.

Looking at a broader scope, making the Eco-Olympics a greater success within residences has the potential to decrease the footprint of Dalhousie University. This is one of Dalhousie's main topics for greening the campus (Office of Sustainability, 2010). In addition, success through student participation has the potential to instill lifestyle changes in first year students. In the words of Graham Carey, first year students have "malleable minds," and when they leave residence, "they'll have these skills developed and hopefully keep applying them" (as cited in Hampson, 2010).

5.0 Methods

To study the research question defined in Section 1.0, the research team formulated both quantitative and qualitative tools to produce the most unbiased investigation possible. It was determined that two surveys would be administered. The first was dispensed to students who had not yet participated in the Eco-Olympics; the second to students who had previously partaken in the event.

5.1 Survey of New Participants

The purpose of the student survey was exploratory. The research group hoped to gain insight into the attitude and motivation associated with student participation in the Eco-Olympics. Furthermore, this survey aimed to elicit the level of student interest in environmental sustainability on campus.

The survey was formulated based on the pilot testing of 3 group members' individual surveys, with a final draft of the survey being compiled based on the questions that most effectively addressed subtopics of the literature review. The final student survey is included; see Appendix D.

After consulting with Melissa Mackay, Dalhousie University's Residence Life Manager, it was determined that the surveying of students would be conducted on Friday February 22 (11:30am-1:30pm & 4:30pm – 6:30pm), Saturday February 23 (4:30pm-6:30pm) and Sunday February 24 (11:30am-1:30pm). A sample population of 250 first year students was obtained using haphazard, convenience, and accidental sampling methods, which allowed the researchers to conveniently administer the questionnaire to any students outside of the Howe Hall cafeteria doors. This method involved sampling whoever was nearby to take the survey. As this method was one of the fastest techniques, and as the research group was unable to obtain a sampling frame, haphazard, convenience and accidental techniques were justified as our sampling method (Palys & Atchison, 2008).

Outside the residence cafeteria was chosen as the sampling location as it is an area with high student traffic, where a vast majority of these students are Howe Hall residents. Due to high activity, this location was expected to provide a high-quality representation of the Howe Hall population through the use of non-probabilistic techniques. Non-probabilistic techniques are

beneficial to use when a sampling frame cannot be obtained, as no representation is required with this method (Palys & Atchison, 2008). As stated above the non-probabilistic technique utilized was the haphazard, convenience and accidental sampling method.

Before participating in the survey, students were asked whether they met the following criteria; whether they were (a). first year students; and (b). residents of Howe Hall. Provided that students met the two listed criteria, they were administered a copy of the survey, and asked to respond to the questions. In order to encourage students to complete the survey the research group offered free chocolate chip cookies, as well as the chance to win a sustainability gift basket. Once the survey has been completed, the student may take their cookie, and fill out a ballot that will be placed in a box for the prize.

Survey questions were strictly structured, closed-ended questions, as they are capable of covering many topics and can generally be answered more quickly than open questions (Palys & Atchison, 2008). A combination of structured and closed-ended questions was used, including ranking questions, categorical questions, and rating questions. All three of these question types allowed for increased ease during analysis, as no qualitative coding techniques were required. Furthermore, these questions were designed to increase ease of participation by limiting the number of responses available.

5.2 Survey of Experienced Participants

In order to understand the opinions of those who have partaken in previous Eco-Olympics, a questionnaire was distributed to Residence Assistants in Howe Hall. The questionnaire was designed by two members of the research team, comprising of both closed ended questions to obtain quantitative data such as single response; rating scale; and likert scale, as well as open ended questions in order to gain qualitative data. The survey questions were then pilot tested on members that fit the criteria for the sample frame but would not be included in the final Residence Assistant survey. The research team utilized a questionnaire so as to maximize anonymity of the participants. In addition the use of a questionnaire in this captive environment permitted a high response rate (Palys & Atchison, 2008).

The criteria for the sample frame for the research was comprised of those who have previously partaken in the Eco-Olympics. It was determined that by using the non-probabilistic sampling techniques of purposive sampling and convenience sampling, the Residence Assistant's

of Howe Hall would be an appropriate group to study. From a purposive perspective, RAs are a good fit for the study as they have lived in residence in past years and have had the opportunity to participate in the Eco-Olympics. Furthermore, this method can be seen as convenience sampling because it was performed on a group of individuals who were simple to track down given the time limitations of the research project. As the research was exploratory, it was understood that there was no best sampling technique (Palys & Aitchison, 2008). In addition, Palys and Aitchison (2008) state that having a formal representation sample is at times impossible, if not expensive and time consuming (pp. 122). Given the time and budget restrictions of the research, these non-probabilistic methods were contextually justified.

On the first Monday of each month, all of the Howe Hall RAs attend a mandatory meeting with Melissa McKay, the Residence Life Manager. In collaboration with Melissa McKay, it was determined that it would be appropriate for the survey to be administered to each of Howe Hall's 27 RAs at the end of their meeting. The survey itself was administered by Melissa McKay at the end of their meeting on March 4, 2013. This date was chosen as it was within the research project time frame. The RAs were asked to answer all questions honestly and to return them to McKay after completion. The following morning, the research team picked up the surveys at which point they were coded by project team members for analysis.

5.3 Coding and Data Analysis

Coding of the results took place on Tuesday March 12, 2013. The coding technique composed of assigning each response with a numeric representation and tabulating each question into Microsoft Excel. The quantitative data for both surveys can be described as: Nominal, as it was simple to determine what it was, and what it was not (where the mode was found); interval-level, for questions that had implied ranking, with equal spaces between each response (where mean, median and mode were all considered); and categorical for questions that responses could be fit into separate ranks that were not necessarily in order (where again, the mode was found) (Palys & Aitchison, 2008, pp. 331-332; T. Wright, personal communication, February 19, 2013). On the other hand, when coding the results from the open-ended, opinion based question, the research team used a grounded a posteriori context sensitive scheme. By doing so, the researchers found that they were able to incorporate all keywords from the respondents answers,

rather than assuming responses. This assisted in eliminating bias from the analysis (T. Wright, personal communication, February 19, 2013).

5.4 Validity, Reliability, and Trustworthiness

When conducting this exploratory research, the project team was determined to provide the highest degree of validity, reliability, and trustworthiness. When looking for validity, two key types can be found within this research. First, is ecological validity. This was achieved when results were generated in an environment that was likely to simulate a true scenario. As the Eco-Olympics is a residence run activity, it was best to survey students in their natural environment. For first year students, they were intercepted outside of the cafeteria of their own residence – an environment where they were likely to have their actions in mind on how they participate. To generate the results of those who have previously partaken in the Eco-Olympics, the research team determined that residence assistants were appropriate to study because as they still live in residence, they are constantly reminded of participation in activities.

Next, it was found that this research had a high degree of external validity. This is achieved when the results can be applied to different populations outside of the sample group (Palys & Atchison, 2008). This was realized by choosing a residence that held the largest number of first year students on Dalhousie's Campus. Furthermore, it was reinforced when the project team selected a large sample size from this population, which also increased the level of confidence. As such, the research team found that the results could be applied to the broader scope of first year students living in residences on the Dalhousie Studley and Sexton Campuses.

Within validity, triangulation is a tool that can be used by researchers to increase the strength of conclusions. This is most often done by using one or more sampling methods within a study. Here, similar questions were asked in both questionnaires. This reinforced the validity of the conclusions as it was possible to determine how generalizable the results were.

Next, reliability is found when similar results are established in different scenarios. The research team utilized several tactics in order to attain reliability. Most importantly, surveys were conducted at different times of the day, on different days of the week, over a full week period. The research team found that this would increase reliability within the study, as it ensured that a variety of people were able to participate in the survey. This helped to achieve reliability as it ensured variation within the sample population, while also reducing potential bias in responses.

Third, it was a goal of the research team to ensure that the study was both trustworthy and credible. First, dependability was achieved by paying close attention to detail within questionnaires and ensuring that once the surveys were completed, proper analysis techniques were utilized in order to keep data separate and to avoid errors within data entry. Second, credibility was achieved by using a variety of reliable sources during all stages of the research. For example, during the literature review, only recent, peer reviewed documents were used.

Thus, by making conscious efforts to ensure that validity, reliability and trustworthiness were kept in mind during the research project, the project team believes that the following report provides information that can be used within Dalhousie University. Furthermore, recommendations should be considered in order take the research from exploratory, to transformative.

5.4 Limitations and Delimitations

Several limitations and delimitations were realized in the study. First, there was the limitation of time. The entirety of the project took place between the middle of January and the beginning of April. Having a short time period available limited the research in two ways. It was determined that within the two and a half months given for the project, it would not be possible to gain insight into every factor behind participation and non participation in residence activities. For this reason, a delimitation that the research group established was to limit the scope of options available in the administered questionnaires to both new participants and experienced participants. This allowed the research team to focus on several key points, rather than a broad array of potential responses. Second, due to the limitation of time, the research team realized that it would not be possible to survey every student living in residence who had not yet participated in the Eco-Olympics, as well as all students that have at Dalhousie University. For this reason, the project team limited the scope of the respondents. As mentioned in Section 4, non-probabilistic sampling techniques were used in order to restrict the number of responses that were generated from the study. This allowed a high degree of confidence without having to research the entire Dalhousie student population.

Subsequently, an additional limitation that was found early in the study was the inability to determine the sincerity of responses from the surveys. As noted by Palys and Atchison (2008), questionnaires hold a certain degree of uncertainty, as it is difficult to determine if responses are

random, or if the survey participants are attempting to manipulate data. There were several delimitations that were applied to the research in order to combat this restriction. First, the research team attempted to monitor both the questionnaires completed by first year students as well as residence assistants. This was done in order to clarify any ambiguities and ensure that participants were working independently. Second, incentives were given to students who agreed to complete the survey. For first year students who were intercepted outside of the Howe Hall cafeteria, cookies were rewarded once the survey was completed. For both first year students and residence assistants, participants were given the choice to fill out a ballot in order to have a chance to win a sustainability gift basket, provided by Rochelle Owen. These methods aided in avoiding manipulation of the data as it provided an incentive to complete the survey, rather than forcefully being told to answer the questions.

6.0 Results

Survey results of first year students (n=250) and RAs (n=27) from Howe Hall residence were examined to define important trends regarding the participation in residence competitions, primarily the Residence Eco-Olympics. Full survey results for both the Student survey and the RA survey are available in the Appendix D and Appendix E.

6.1 New Participant Results

When asked what they believed were the most important influences on involvement in residence activities, two influences accounted for more than half of the replies of the surveyed students. 36.8% of participants were influenced by their personal interest in the activity, and 20.8% were influenced by the attitude of their friends towards the activity (Figure 2).

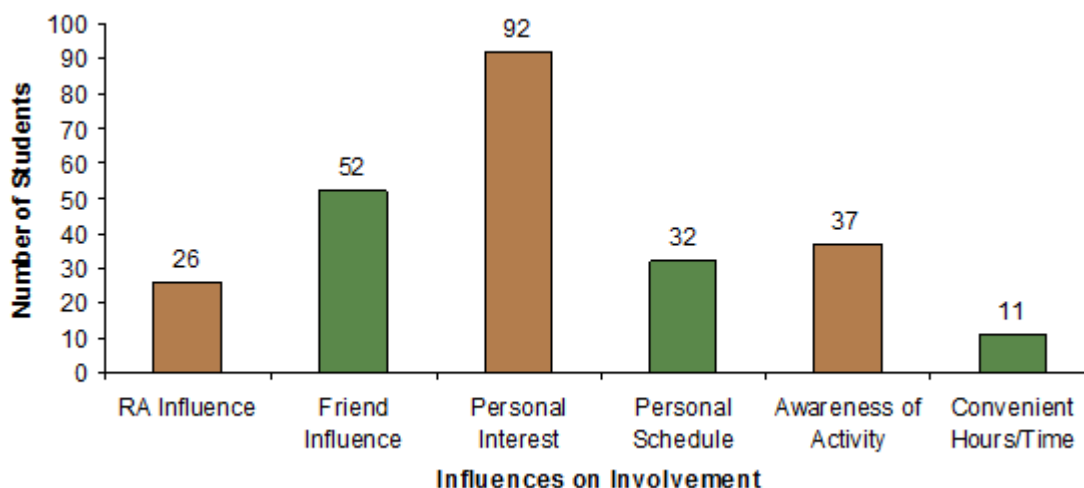


Figure 2 Influences on involvement in residence activities among surveyed Howe Hall first year students (n=250).

Participants were then asked which methods they believed to be the most effective means of increasing student awareness of residence activities. The use of posters was the most effective method accounting for 41.2% of participants' choices, followed by 22.4% of participants choosing social media (Figure 3).

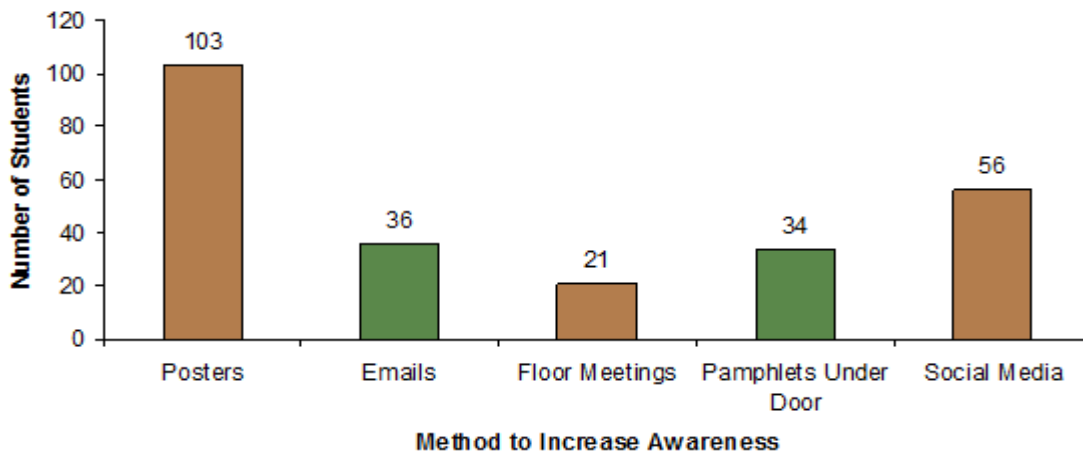


Figure 3 Effective methods to increase awareness of residence activities among surveyed Howe Hall first year students (n=250)

Participants were questioned on their personal level of interest in environmental sustainability on campus. Most participants displayed some interest; 34.4% of participants were slightly interested, and 38.8% were interested (Figure 4).

Following their level of interest in environmental sustainability, participants were asked which environmental sustainability topics were of greatest importance to them. The most frequent answer was 28% Energy, 25.2% Water and 22% Waste (Figure 5).

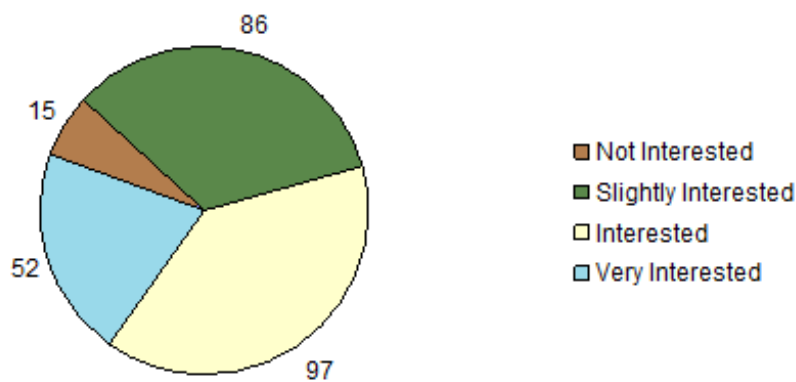


Figure 4 Level of interest in environmental sustainability among surveyed Howe Hall first year students (n=250)

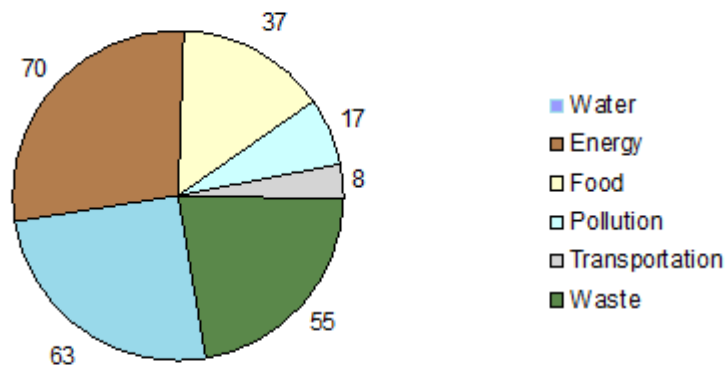


Figure 5 Importance of environmental sustainability topics among surveyed Howe Hall first year students (n=250).

Next, the question of which month residence competitions should be held was asked to student participants. Almost half of the surveyed students selected September as the most suitable month for competitions, accounting for 47.2% of participants (Figure 6).

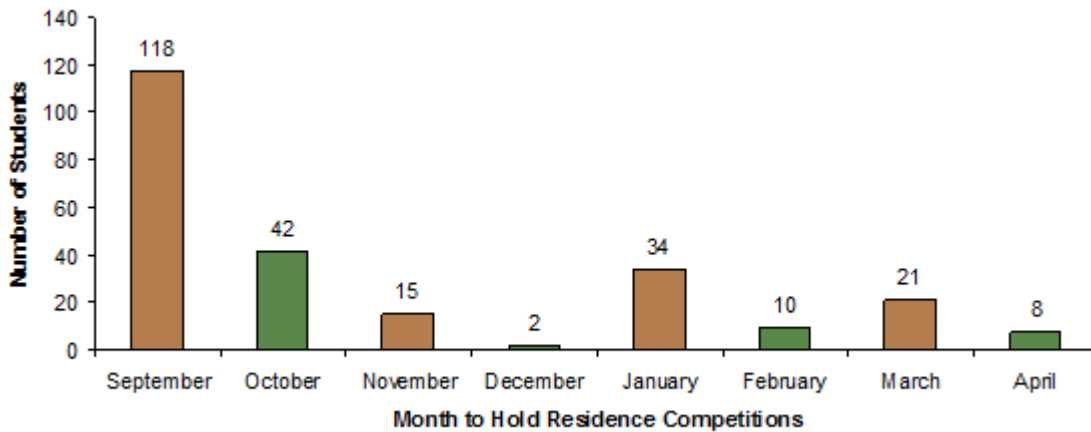


Figure 6 Preferred month of the academic year to hold residence competitions among surveyed Howe Hall first year students

As prizes are often a source of incentive for many competitions, participants were asked what their likelihood of participation would be provided there were prizes involved in residence competitions. Nearly all (92.8%) of surveyed students suggested that they were more likely to participate if a prize was involved.

Participants were then questioned of their interest from seven different prizes to determine which were most desired by the first year student population (Figure 8). The most appealing prizes chosen by the surveyed students were bookstore gift certificates (36.4%) and champion t-shirts (22%).

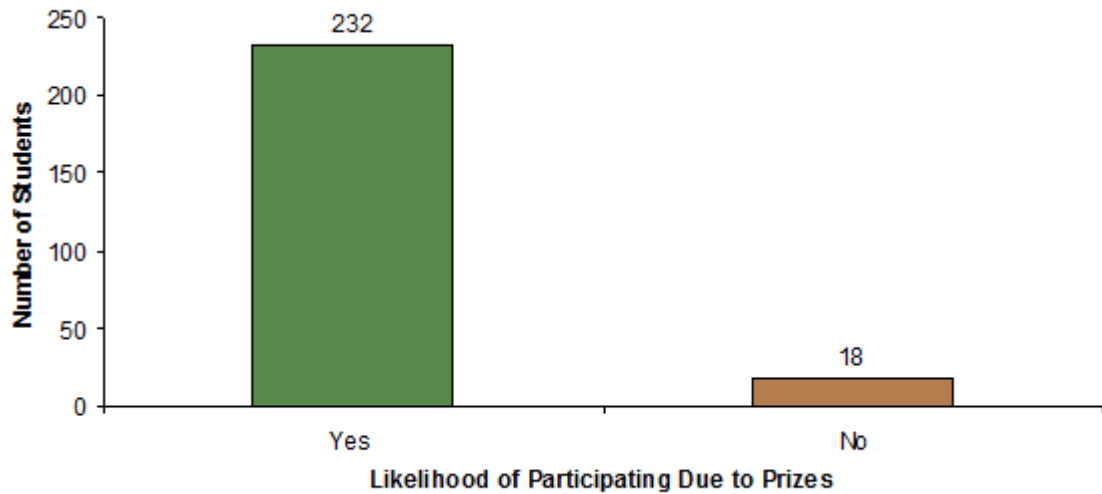


Figure 7 Likelihood of participation due to prizes among surveyed Howe Hall first year students (n=250).

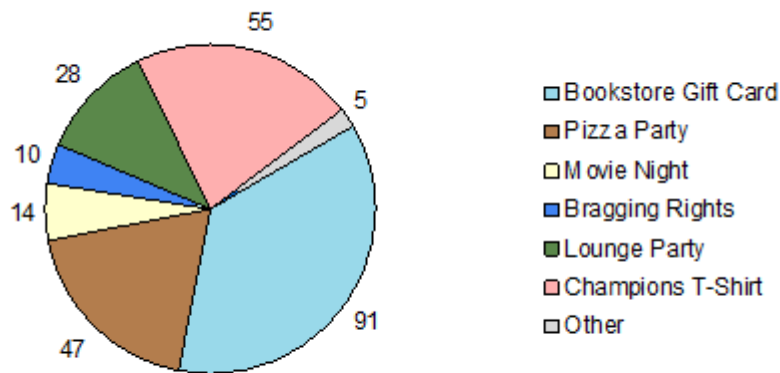


Figure 8 Appeal of various residence activity prizes among surveyed Howe Hall first year students (n=250).

Finally, participants were asked of their current knowledge of the upcoming Residence Eco-Olympics competition. The results of this survey question highlighted that 66% of surveyed students had not yet heard of the Eco-Olympics (Figure 8).

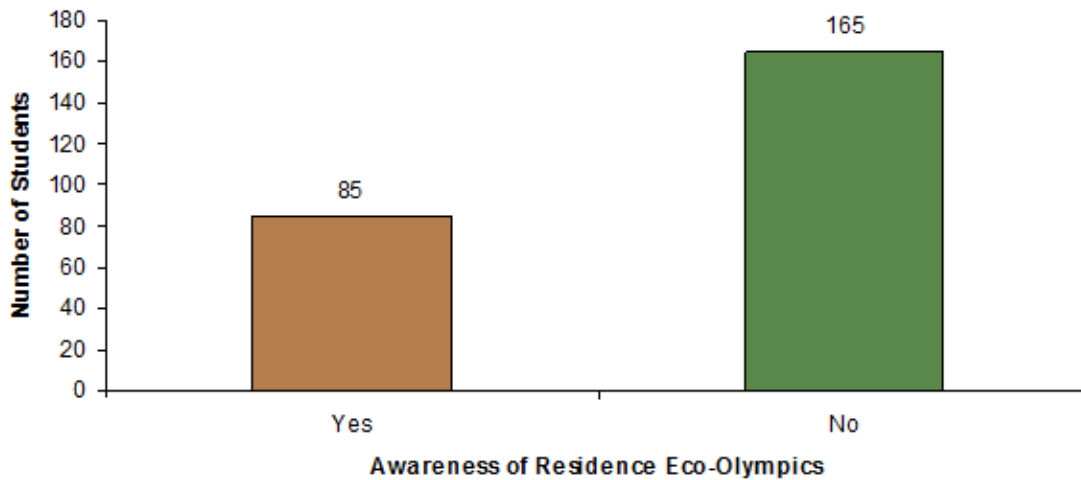


Figure 9 Awareness of Residence Eco-Olympics competition among surveyed Howe Hall first year students (n=250)

6.2 Experienced Participants Results

RAs were initially question on their past participation in Residence Eco-Olympics. Here, it was found that a large majority (85.2%) of RAs had not participated in Eco-Olympics in past years of the competition (Figure 10).

The level of involvement in the Residence Eco-Olympics was then measured, asking RAs to what degree they had previously been involved (had they been involved). These results suggested that 77.8% of RAs had the least degree of involvement in the competition (Figure 11)

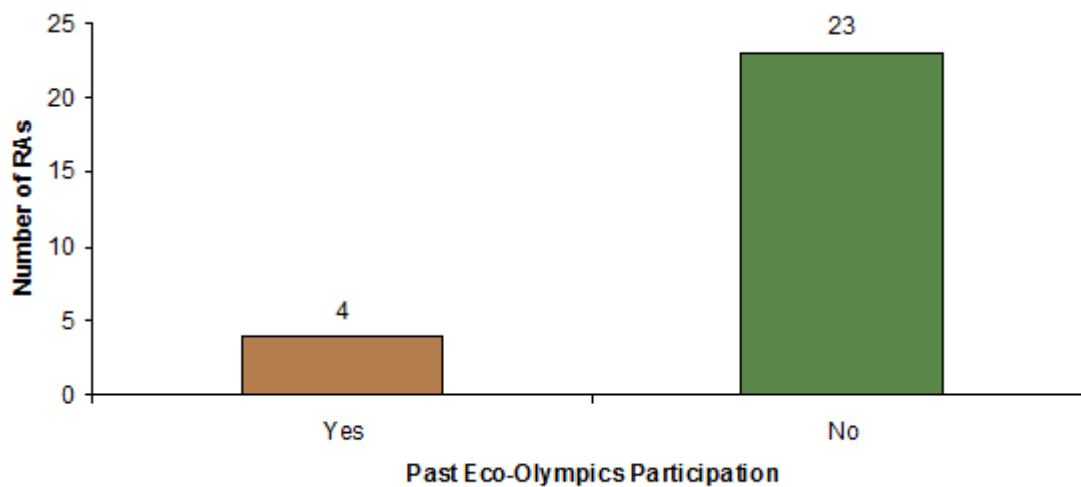


Figure 10 Past residence Eco-Olympics competition participation among surveyed Howe Hall Residence Assistants (n=27)

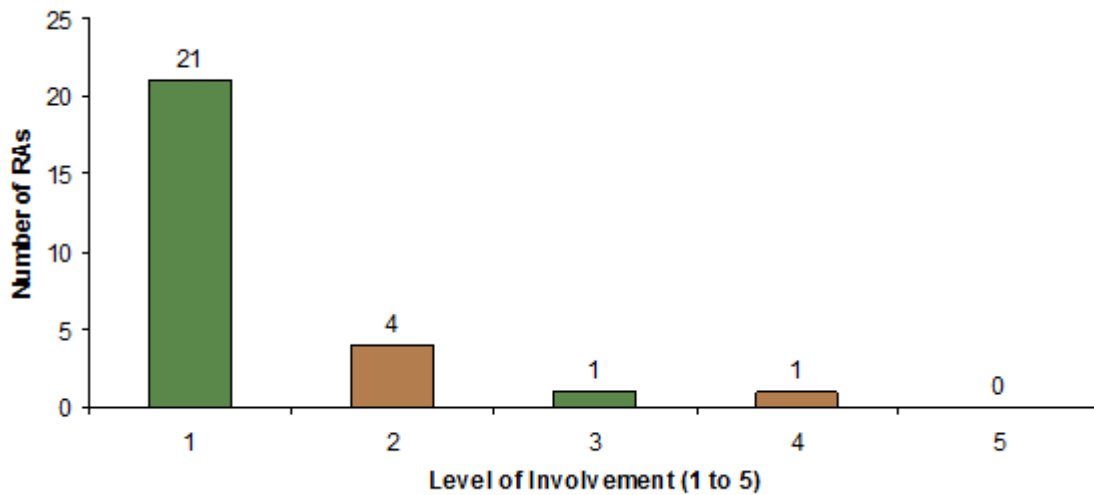


Figure 11 Previous year level of involvement in Eco-Olympics among surveyed Howe Hall RA's (n=27); where 1 represents not very involved, 5 represents very involved

RA participants were then asked what they believed were the most important factors in the lack of student participation in residence activities. Of these factors listed (Figure 12), lack of awareness was the largest factor (74.1%) followed by lack of interest within their friends group (51.9%). In contrast, only 3.7% of surveyed RA's believed that their own personal participation affected the participation of first year students in residence.

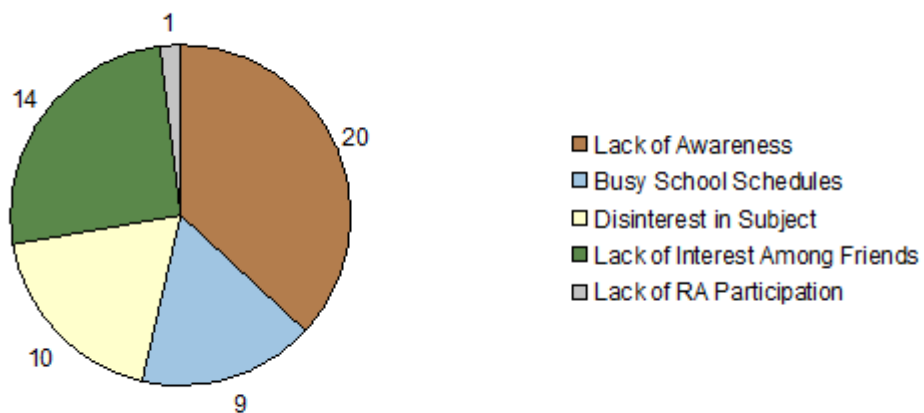


Figure 12 Largest factors impeding first year students participation in residence activities suggested by surveyed Howe Hall residence assistants (n=27)

RA participants were asked of their personal perception on the awareness of first year students in residence, specifically towards the Eco-Olympics. A total of 70.4% of RAs believed that students were unaware of this residence activity (Figure 13).

They were then asked if they believed that the way the Eco-Olympics are currently designed had the ability to influence long-lasting sustainable lifestyle choice of participants. More than half of the RAs (51.9%) answered that they did not believe there were any lasting effects (Figure 14).

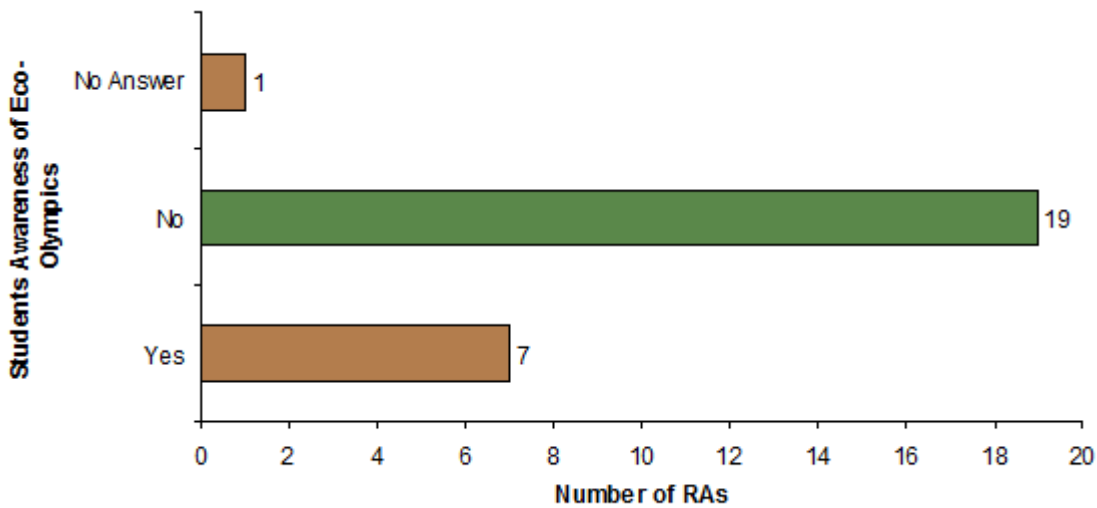


Figure 13 RA conception of student awareness of Eco-Olympics competition among surveyed Howe Hall RAs (n=27)

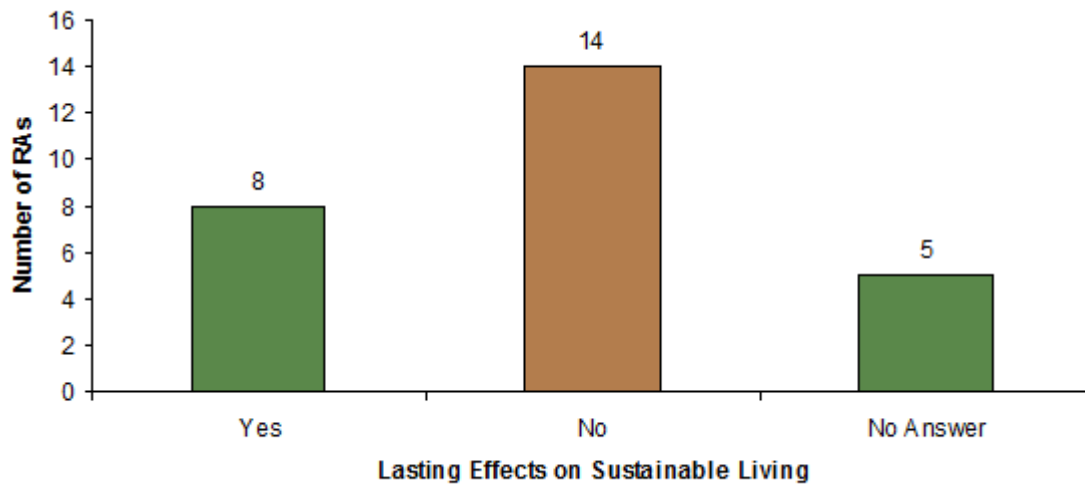


Figure 14 Belief on lasting effects of current Eco-Olympics competitions on sustainable lifestyle choice changes of students living in residence, among surveyed Howe Hall RA's (n=27)

7.0 Discussion

The discussion is comprised of our significant findings and how they relate to the three distinct topics that were introduced previous during the literature review. These include: The underlying reasons a student might have for participating; the integration of effective feedback with appropriate incentives; and communication tools used to make students self-aware. These are all important factors that facilitate participation in extracurricular competitions. The remainder of the report will discuss how the findings relate to the initial literary review in order to gain a better understanding of what might make students more or less likely to participate in the Dalhousie Residence Eco-Olympics. We will also examine the conflicting ideologies in hopes to uncover the sources of inconsistencies. It is the goal of this project to find the context specific reasons on how the residence Eco-Olympics at Dalhousie University can be more successful by using these three themes.

7.1 Overview of Significant Findings

Upon analyzing the coded results, the research team found the perspectives of both students and RAs very enlightening to the research. The exploratory research produced results indicating that RAs and students had concurrent perspectives that were simultaneously consistent with much of the literature reviewed. Students would like to get more involved in residence-run events, but find accessibility of information and timing of events an issue, which negatively influences participation. RAs believe that the Eco-Olympics administrators have done a poor job of facilitating feedback to participants, thus discouraging involvement. RAs thought that they needed further backing from the Dalhousie Student Union Sustainability Office and Dalhousie Student Union in order to facilitate larger events.

7.1.1 Communication Tools

Although Dalhousie has attempted to promote Residence Eco-Olympics through the use of posters, e-mails, newsletters, and on their website, the number of students that were unaware of Eco-Olympics was astonishing. As can be seen in Figure 9, over half of the first year students living in residence (66%) had never heard of Eco-Olympics prior to the survey. The majority of RAs surveyed (70.4%) also believed that first year students were unaware of Eco-Olympics

(Figure 13). This was especially surprising as there were posters promoting the event all around the residence and throughout campus. Posters have been shown to be an effective communication tool to convey sustainable activities (Whitehair et al, 2013; Kahler, 2003). In a conflicting study it was found that face-to-face communication and university websites were more successful means of conveying environmental events (Sharp, 2002; Franz-Balsen, 2007). This study did not match with the viewpoints portrayed by first year students living in Dalhousie's Howe Hall, as they believed the most effective way to increase awareness was through posters, then by social media as can be seen in Figure 3.

First year students living in residence may believe that posters were the best communication tool but this did not appear to be the reality, as the majority of first year students surveyed had not heard of Eco-Olympics despite the many posters throughout the University. As such, posters alone are not a sufficient communication tool and must be combined with various other techniques. In a study performed on the effectiveness of posters by Pulley *et al*, it was determined that only 32% of the participants recalled seeing a poster, and many of those participants could not recall the main issue presented in the posters (Pulley *et al*, 2007). Even though students may believe that posters are the best solution to increasing awareness this may not be true, as posters aren't always noticed. In a conflicting study performed by Whitehair *et al*, it was determined that posters were in fact an efficient communication tool (Whitehair *et al*, 2013). The true effectiveness of posters pertaining to the Eco-Olympics should be examined in future research, but the project team believes that a combination of techniques may be the best solution to creating and raising awareness for Eco-Olympics at Dalhousie.

7.1.2 Influences on Participation

A study performed by Savageau (2013) determined that students were less likely to participate in events during busy school times, as students were more likely to put effort into academics as opposed to extracurricular activities. This research followed this pattern, with 47.2% of first year students indicating they would be more likely to get involved in Eco-Olympics if they occurred in September (Figure 6). Although the explanation as to why students would prefer the Eco-Olympics to occur in September was not examined it would be a viable deduction that September is a less stressful and class intensive time for many students as opposed to March, when the winter term is coming to an end. As such, students may be more likely to participate in extracurricular activities due to their increased amount of free time.

One clear conclusion from this study was that the largest factor for students not participating was the lack of awareness. RAs themselves rarely participated in Eco-Olympics their first year of study, with 85.2% indicating that although they lived in residence during previous years Eco-Olympic games, they did not participate, or had a low degree of participation (Figure 10 and Figure 11). As such they fail to assist in raising awareness of Eco-Olympics to first year students, where 74.1 % of RAs believed that students do not participate due to lack of awareness (Figure 12). Different methods of communication to students may be an asset in increasing participation and will be discussed further in this report.

Although Mantere and Vaara (2008) suggest that increasing the role of residence assistants may increase the involvement of students in residence, the project team found that RAs believed that their own participation in the Eco-Olympics had no real effect on first year students. Here, only 3.7% of the RAs believed they have an influence (Figure 12). This pattern of thinking must shift, as research has proved the involvement of RAs can increase the involvement of first year students. The organizers of Eco-Olympics should be putting more of a focus on RA involvement and participation to hopefully increase the participation and awareness of first year students.

Another issue examined was that many students do not give much thought to their waste patterns and energy consumption and that when confronted with these issues were overwhelming and distant (Savageau, 2013). As a University that has sustainability as a prominent theme, it was not surprising to see that 34.4% of first year students found environmental sustainability on campus slightly interesting, and 38.8 % found it interesting (Figure 4). These numbers show that students are actively interested and would likely get involved in Eco-Olympics. Furthermore, even though many studies have shown students do not give much thought to their waste patterns Dalhousie has the opportunity to increase this interest of environmental sustainability through Eco-Olympics.

Community Based Social Marketing should be utilized to determine what it is that students want to get involved with. Doug McKenzie-Mohr (2000) suggests that participation can be increased by determining what motivates the population. As the first year student population is interested in environmental sustainability we may be able to increase participation by focusing on their interests. Within the student survey, it was found that the top three issues that students felt strongly about were energy, water and waste (Figure 5). Through the use of CBSM, as only

two of seven issues are explored through competition, additional sections of competition may be integrated in order to generate greater involvement.

7.1.3 Feedback and Incentives

A study by Wu et al., (2012) claimed that immediate feedback is beneficial in learning achievement and motivation. It makes the efforts of students tangible, thus making it easier to improve individually or as a whole residence. Feedback would be beneficial for first year students in order to learn of their impact so that if by chance they become RAs, they will be knowledgeable of the topic and be able to easily educate others. Over half the RA respondents believed that current facilitation of instant feedback was poorly conducted [14.8% very poor, 11.1% poor, 33.3% slightly poor]. However, no individual RA thought that this was one of the most important factors behind students getting involved in residence activities. For many, the additional information provided through heightened feedback could be a form of consolation prize that recognizes the efforts of those that did not win.

First year students responded positively to the suggestion of having rewards being given out during a residence competition, with 92.8% of students indicating that they would be more inclined to participate if a reward was included (Figure 7). This validates the findings of Peterson et al., (2007) that incentives are a positive influence on student participation and behaviors. According to first year students, bookstore gift certificates are the most desired prize to be rewarded of the list provided for a competition of this nature (Figure 8). Expanding influence through promotion is important, although if students are unaware of the competition, it would be very unlikely that they would be aware of the prizes included. RAs were relatively unsure how well incentives were facilitated in previous years. For this reason, there is reason to believe that they were ineffectively utilized in past Eco-Olympics.

Communication tools could positively impact participation by marketing prizes and other incentives through different mediums. Since students would be more inclined to participate if they were rewarded for their efforts, supplementary prizes could be offered to recognize the efforts of second and third place. With additional prizes being offered, students may be more likely to notice and recognize posters distributed around campus.

8.0 Conclusion

8.1 Major Contributions to the Study

From the team's analysis of the data collected for the study, the group was able to determine the underlying reasons for non-participation among first year students as well as effective techniques for increasing participation and fostering awareness in the Dalhousie residence Eco-Olympics. The Dalhousie residence Eco-Olympics is a challenge used to gain awareness of energy and water consumption patterns, sustainability issues, and to promote a increase in sustainable lifestyle choices. Therefore, in order to effectively gain awareness and reduce consumption levels, there must be a high level of active participation in the Eco-Olympics. This study contributes an understanding of student participation in residence events. This can be used to increase the influence of the Eco-Olympics on the behaviors and choices of first year students. Furthermore, this may help Dalhousie reach their broader sustainability goals.

The research team hopes that the Green Residence Forum and the Dalhousie Office of Sustainability can use the recommendations to improve the overall effectiveness of the Dalhousie residence Eco-Olympics. This may allow for increased participation in the residence Eco-Olympics as well as other Dalhousie residence events. The results of the study may contribute to creating a more comprehensive and interactive Eco-Olympics. First year students may then be more inclined to get involved. The Eco-Olympics are a vehicle through which Dalhousie can raise awareness of sustainability issues while reducing energy, water, and waste consumption levels. The study may help the DSUSO to achieve Dalhousie's broader sustainability goals through generating a better understanding of student participation, and therefore increasing participation in the Eco-Olympics.

8.2 Recommendations for Action

In preparation for the Dalhousie residence Eco-Olympics of 2014, the research group recommends four major actions that may increase participation, create awareness, and increase the overall effectiveness of the Eco-Olympics.

First, the project team recommends better prize incentives to increase participation. Currently, students do not receive any prize from which they directly benefit. Students responded

that preferred prizes would be t-shirts and pizza parties. Students would directly benefit from these prizes and would therefore have a greater incentive to participate themselves, as well as to influence their peers to also participate. The Green Residence Forum should strongly consider integrating t-shirts or a pizza party for the students in the winning residence when planning for 2014.

Second, the Green Residence Forum should expand the Eco-Olympics to include measuring waste along with energy use and water consumption. Including waste as a third measured category in the Eco-Olympics may give students more incentive, to participate as it will create a third category in which they can make a positive change. Including waste as a third category in the Eco-Olympics may increase the connection between the students and the competition, resulting in increased levels of participation, as well as waste reduction.

Third, respondents suggested that the use of posters and social media to promote the Eco-Olympics would be the most effective way of increasing participation. The project team recommends that the Green Residence Forum should put an emphasis on producing posters to help increase the awareness of the 2014 Eco-Olympics. Posters should be designed in order to communicate the purpose of the Eco-Olympics, as well as highlight the prizes that may be won in order to capture the attention of first year students. The Eco-Olympics should be promoted through social media outlets in advance of the 2014 Eco-Olympics. Engaging with students through Facebook and Twitter may be an effective way of increasing awareness of the Eco-Olympics, which may perhaps generate an increased level of participation.

Finally, we recommend that the Eco-Olympics take place in September for the 2014 academic year. Almost half of the first year students responded that they would be more willing to participate in the Eco-Olympics if it was held in September rather than March. In September, competition and school spirit is high among first year students, and the school workload is very little. In March, the workload is much higher and students have less time to think about extracurricular activities. Holding the Eco-Olympics in September might allow students to be more actively involved in the reduction of energy, water, and waste consumption and generation. This has the potential to make the Eco-Olympics a more effective event.

8.3 Recommendations for Further Research

It is important that future research is done in order to gain an understanding of the effectiveness and feasibility of the recommended actions aimed towards increasing participation

in the Eco-Olympics. Further exploration on the financial possibility of incorporating better prizes should be conducted, as well as exploring more prize options that may influence participation. Communication between the Dalhousie Office of Sustainability and the Green Residence Forum is encouraged in order to discuss the financial feasibility of funds that could be used to purchase prizes.

Importantly, research on the effective branding of posters should be conducted to allow for greater awareness of the Eco-Olympics as a residence event. This research should include poster design as well as poster placement. The project team recommends further research to determine the most effective locations to place posters, for better advertisement of the Eco-Olympics to the first year student population. This research would serve a broader goal of understanding student responses to advertising tools, and may generate important results on how to better promote campus events.

Respondents in our study suggested social media outlets, such as Facebook and Twitter, to be the most effective forms of social media. Social media outlets serve as powerful communication tools that can reach a large student population. Research into social media strategies and promotion of events should be explored. This research could be done in collaboration with existing social media outlets in the Dalhousie University community.

9.0 Acknowledgements

We would like to thank the following individuals for their guidance and support of our study.

Dean Martin, Residence Life Manager, Dalhousie University

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Rochelle Owen, Director of Sustainability, Dalhousie University

Tarah Wright, Project Mentor, Dalhousie University

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11.0 Appendices

11.1 Appendix A: Ethics Review

**ENVIRONMENTAL SCIENCE PROGRAM
FACULTY OF SCIENCE
DALHOUSIE UNIVERSITY
(version 2010)
APPLICATION FOR ETHICS REVIEW OF RESEARCH INVOLVING HUMAN
PARTICIPANTS
UNDERGRADUATE THESES AND IN NON-THESIS COURSE PROJECTS**

GENERAL INFORMATION

1. Title of Project: Reasons behind participation in Dalhousie residence Eco-Olympics

2. Faculty Supervisor(s)	Department	e-mail:
Tarah Wright	Environmental Science	Tarah.Wright@dal.ca

3. Student Investigator(s)	Department	e-mail:
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Matt Nevins Sustainability & Management (902) 452-5487		mattnevins@dal.ca
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Alicia Belanger Biology & Environmental Science (519) 365-9940		al533716@dal.ca
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Gretchen Wagner Marine Biology & Env. Studies (902) 789-3875		gr674350@dal.ca
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4. Level of Project: Non-thesis Course Project [x] Undergraduate [x] Graduate []
Specify course and number: 3502 ENVS/SUST Campus as a Living Lab

5. a. Indicate the anticipated commencement date for this project:

Friday February 22, 2013

b. Indicate the anticipated completion date for this project:

Friday April 12, 2013

SUMMARY OF PROPOSED RESEARCH

1. Purpose and Rationale for Proposed Research:

The Dalhousie residence Eco-Olympics is a challenge used to gain awareness of energy and water consumption patterns, sustainability issues, and to promote more environmentally friendly lifestyle choices. Every March, students in residences across campus compete against one another over a two-week period to see who can reduce energy and water consumption against baseline data. The winning residence is the residence that achieves the greatest reduction in consumption compared to their baseline measurement. However, this year, it is said that a broader sustainability challenge will be organized. The purpose of this research is to understand and evaluate communication vehicles and campaigns to increase awareness in residence activities and change behavior.

As a result, the following research proposal seeks to explore the issue of student participation. This will be achieved through researching the following question:

"What influences student participation in the Dalhousie Residences Eco-Olympics?"

This question will be explored under a broad scope of research, focusing in on three main themes: reasons for youth participation and lack of participation in competitions and activities, integrating incentives and the effects on participation rates, as well as effective means of communication campaigns for awareness.

2. Methodology/Procedures

a. Which of the following procedures will be used? Provide a copy of all materials to be used in this study.

- Survey(s) or questionnaire(s) (mail-back)
- Survey(s) or questionnaire(s) (in person)
- Computer-administered task(s) or survey(s)
- Interview(s) (in person)
- Interview(s) (by telephone)
- Focus group(s)
- Audio taping
- Videotaping
- Analysis of secondary data (no involvement with human participants)
- Unobtrusive observations
- Other, specify _____

b. Provide a brief, sequential description of the procedures to be used in this study. For studies involving multiple procedures or sessions, the use of a flow chart is recommended.

1. [Preliminary Research]
2. [Project Research Question Finalized]
3. [Proposal] – [Ethics Approval]

4. [Data collection day 1] [Data collection day 2] [Data collection day 3] - [RA Data Collection]
5. [Data Analysis]
6. [Final report] – [Feedback]
7. [Project Presentation]

3. Participants Involved in the Study: *Indicate who will be recruited as potential participants in this study.*

Dalhousie Participants:

- Undergraduate students
- Graduate students
- Faculty and/or staff

Non-Dal Participants:

- Adolescents
- Adults
- Seniors
- Vulnerable population* (e.g. Nursing Homes, Correctional Facilities)

** Applicant will be required to submit ethics application to appropriate Dalhousie Research Ethics Board*

b. *Describe the potential participants in this study including group affiliation, gender, age range and any other special characteristics. If only one gender is to be recruited, provide a justification for this.*

There are two groups of potential participants that will populate our study.

1. This group will be students that:
 - Currently live in Howe Hall
 - Have never participated in the Eco-Olympics

- 2) Current Residence assistants in Howe Hall.

c. *How many participants are expected to be involved in this study?*
250

4. Recruitment Process and Study Location

a. *From what source(s) will the potential participants be recruited?*

- Dalhousie University undergraduate and/or graduate classes
- Other Dalhousie sources (specify) - Current Howe Hall Residents
- Local School Boards*
- Halifax Community
- Agencies
- Businesses, Industries, Professions
- Health care settings*

[] Other, specify (e.g. mailing lists) _____ *

Applicant may also require ethics approval from relevant authority, e.g. school board, hospital administration, etc.

b. Identify who will recruit potential participants and describe the recruitment process.

Provide a copy of any materials to be used for recruitment (e.g. posters(s), flyers, advertisement(s), letter(s), telephone and other verbal scripts in the appendices section.

Students will be asked to voluntarily participate in the survey by the researchers as they enter the Howe Hall cafeteria. Participation is optional and anonymous.

Data collection from the Residence Assistants will be done through the Residence Education Officer, who will provide the Head Residence assistant with the survey. Residence assistants will then be asked to complete the survey during their weekly meeting. Participation is again voluntary and anonymous. The researchers will not be present at the meeting due to the potential for discussion involving the ‘personal information’ of students who live in residence. The researchers will collect the survey from the head residence assistant upon completion.

5. Compensation of Participants: Will participants receive compensation (financial or otherwise) for participation?

Yes [] No [] If Yes, provide details:

Students who complete the survey will be offered free cookies as compensation.

Students who complete the survey will be given the chance to enter into a draw to win a sustainability gift package.

6. Feedback to Participants

Briefly describe the plans for provision of feedback and attach a copy of the feedback letter to be used. Wherever possible, written feedback should be provided to study participants including a statement of appreciation, details about the purpose and predictions of the study, contact information for the researchers, and the ethics review and clearance statement. Note:

When available, a copy of an executive summary of the study outcomes also should be provided to participants.

The details, background, and purpose of the study will be available to participants before they complete the survey. However, due to the anonymity of the survey, participants will not receive direct feedback concerning the results of the study.

The findings of the study will be provided to the Residence Education Officer and the Dalhousie Office of Sustainability. The findings will help increase the effectiveness of the Eco-Olympics as well as increase participation in campus events.

POTENTIAL BENEFITS FROM THE STUDY

1. Identify and describe any known or anticipated direct benefits to the participants from their involvement in the project.

The purpose of this research study is to better understand and evaluate communication vehicles and campaigns in order to increase the effectiveness of the Eco-Olympics at Dalhousie. This study will generate research that will allow for a better understanding of how participation can be increased in the Eco-Olympics as well as other campus events. The anticipated direct benefits of the participants are:

- A generated interest in environmental programs
- An increase in environmental knowledge and awareness
- More effective programs at their university
- The ability to express their opinions on a program that they can be directly involved with.

2. Identify and describe any known or anticipated benefits to society from this study.

The anticipated benefits to society resulting from this study are as follows:

- An increase in environmental awareness
- Improved understanding of what influences student participation in programs.

POTENTIAL RISKS TO PARTICIPANTS FROM THE STUDY

1. **For each procedure used in this study, provide a description of any known or anticipated risks/stressors to the participants. Consider physiological, psychological, emotional, social, economic, legal, etc. risks/stressors and burdens.**

No known or anticipated risks Explain why no risks are anticipated:

Minimal risk * Description of risks:

Greater than minimal risk** Description of risks:

** This is the level of risk associated with everyday life. ** This level of risk will require ethics review by appropriate Dalhousie Research Ethics Board*

2. Describe the procedures or safeguards in place to protect the physical and psychological health of the participants in light of the risks/stresses identified in Question 1.

N/A

INFORMED CONSENT PROCESS

Refer to: <http://pre.ethics.gc.ca/english/policystatement/section2.cfm>;

1. What process will be used to inform the potential participants about the study details and to obtain their consent for participation?

Information letter with written consent form; provide a copy

Information letter with verbal consent; provide a copy

Information/cover letter; provide a copy

Other (specify)

2. If written consent cannot be obtained from the potential participants, provide a justification.

ANONYMITY OF PARTICIPANTS AND CONFIDENTIALITY OF DATA

1. Explain the procedures to be used to ensure anonymity of participants and confidentiality of data both during the research and in the release of the findings.

In this study, participants are not asked to provide any confidential or personal information. Due to this, participants have complete anonymity in both the research and in the release of the findings.

2. Describe the procedures for securing written records, questionnaires, video/audio tapes and electronic data, etc.

The written records will be kept under lock and key in Tarah Wright's office

3. Indicate how long the data will be securely stored as well as the storage location over the duration of the study. Also indicate the method to be used for final disposition of the data.

- Paper Records
- Confidential shredding after 4 months
- Data will be retained until completion of specific course.
- Audio/Video Recordings
- Erasing of audio/video tapes after _____
- Data will be retained until completion of specific course.
- Electronic
- Erasing of electronic data after _____
- Data will be retained until completion of specific course.
- Other

(Provide details on type, retention period and final disposition, if applicable)

Specify storage location: Safely stored inside of Researchers home during analysis of data. Then transferred to Tarah Wright to store in her office.

Appendices: ATTACHMENTS Please **check** below all appendices that are attached as part of your application package:

- Recruitment Materials:** A copy of any poster(s), flyer(s), advertisement(s), letter(s), telephone or other verbal script(s) used to recruit/gain access to participants.
- Information Letter and Consent Form(s).** Used in studies involving interaction with participants (e.g. interviews, testing, etc.)
- Information/Cover Letter(s).** Used in studies involving surveys or questionnaires.
- Materials:** A copy of all survey(s), questionnaire(s), interview questions, interview themes/sample questions for open-ended interviews, focus group questions, or any standardized tests used to collect data.

SIGNATURES OF RESEARCHERS

Signature of Student Investigator(s) Date

Signature of Student Investigator(s) Date

Signature of Student Investigator(s) Date

Signature of Student Investigator(s) Date

Signature of Student Investigator(s) Date

Signature of Student Investigator(s) Date

Signature of Student Investigator(s) Date

FOR ENVIRONMENTAL SCIENCE PROGRAM USE ONLY: Ethics proposal been checked for eligibility according to the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans

Signature Date

Signature Date

Appendices

Appendix A – Residence Assistant Survey (*See Appendix 11.5*)

Appendix B – Student Survey (*See Appendix 11.4*)

Appendix C – Information Letter

Reasons behind participation in Dalhousie residence Eco-Olympics

The Dalhousie residence Eco-Olympics is a challenge used to gain awareness of energy and water consumption patterns, sustainability issues, and to promote more environmentally friendly lifestyle choices. Every March, students in residences across campus compete against one another over a two-week period to see who can reduce energy and water consumption against baseline data (Dalhousie University, 2013a). The winning residence is the residence that achieves the greatest reduction in consumption compared to their baseline measurement (Dalhousie University, 2013b).

However, this year, it is said that a broader sustainability challenge will be organized. The purpose of this research is to understand and evaluate communication vehicles and campaigns to increase awareness in residence activities and change behavior.

As a result, the following research proposal seeks to explore the issue of student participation. This will be achieved through researching the following question:

"What influences student participation in the

Dalhousie Residences Eco-Olympics?"

This question will be explored under a broad scope of research, focusing in on three main themes: reasons for students participation and lack of participation in competitions and activities, integrating incentives and the effects on participation rates, as well as effective means of communication campaigns for awareness. This research is intended to represent the views and opinions of first year students living in residence on Dalhousie Studley and Sexton campus's that have not yet participated in the Eco-Olympics; and Residence Assistants (RAs) who have taken part in Eco-Olympics in previous years. The research will be conducted during the months of February through April of 2013.

The following survey has been designed for Residence Assistants who have participated in Eco-Olympics. It has been designed to help the researchers understand what can improve participation rates for the competition.

If there are any questions, do not hesitate to contact Tarah Wright at tarah.wright@dal.ca.

11.2 Appendix B: Project Proposal

Research Proposal:

*Participation in the Dalhousie Residence
Eco-Olympics*

Project Mentor: Dr. Tarah Wright

Research Team: Alicia Belanger, Matt Nevins, Sam Maize, Gretchen Wagner & Julia Whitney
SUST 3502

Due: Friday February 22, 2013

1.0 Project Definition

The Dalhousie residence Eco-Olympics is a challenge used to gain awareness of energy and water consumption patterns, sustainability issues, and to promote more environmentally friendly lifestyle choices through a residence competition. Every March, students in residences across campus compete against one another over a two-week period to see who can reduce energy and water consumption against baseline data (Dalhousie University, 2013a). The winning residence is the residence that achieves the greatest reduction in consumption compared to their baseline measurement (Dalhousie University, 2013b).

However, this year, a broader sustainability challenge will be organized. The purpose of this research will be to understand and evaluate the communication vehicles and campaigns to increase awareness in residence activities and change behavior.

As a result, the following research proposal seeks to explore the issue of student participation in residence activities at Dalhousie. This will be achieved through researching the following question:

*"What influences student participation in the
Dalhousie Residences Eco-Olympics?"*

This question will be explored under a broad scope of research focusing in on three main themes: reasons for students participation and lack of participation in competitions and activities, integrating incentives and the effects on participation rates, as well as effective means of communication campaigns for awareness. This research is intended to represent the views and opinions of first year students living in residence on Dalhousie's Studley and Sexton campuses that have not yet participated in the Eco-Olympics; and Residence Assistants (RAs) who have taken part in Eco-Olympics in previous years. The research will be conducted during the months of February through April of 2013.

1.1 Limitations

A first limitation that the research team has acknowledged is time. Due to this limitation, the team will be unable to survey every first year student living in residence. In this way, the total population will not be reached. However, this will be addressed by systematically choosing the largest residence (Howe Hall) and choosing an appropriate sample size (250 of 817 students). By doing so, the research will possess a 95% confidence level with a confidence interval of 5%.

A second limitation that has been acknowledged by the research team is the potential for students to falsify answers. As truthfulness cannot be guaranteed or evaluated, answers may differ from actual opinions. In addition, a third limitation is that residence Eco-Olympics take place at few schools across the world. As a result, there are few peer-reviewed articles reflecting the opinions and results of similar competition that can be used for comparison.

1.2 Scope

The research that will be conducted in this project will serve the needs of Dalhousie residences. Temporally, the research will take place between the months of February through March, with a final deliverable of a report and short presentation to be presented in April. Spatially, the boundaries of this research will hit many different locations. In the literature review, information will be taken from academic, peer-reviewed articles with studies based on post-secondary schools across the world. Locally, the research will take place on the Dalhousie campus, strategically addressing the opinions of students across campus.

1.3 Research Hypothesis:

Before commencing the bulk of the research, the research team hypothesized the potential results. It was hypothesized that given the nature of residence competitions, much would need to change in order to achieve greater success in the Dalhousie Residence Eco-Olympics. This is based on personal opinions that each individual has their own preference for the kinds of activities they wish to participate in; and that each individual reacts differently to different kinds of communication tools and incentives. While the research team does not believe there will be a general consensus in the data, team members are hopeful – for if tangible results are achievable in this research, great success can come for not only the residences on Dalhousie campus, but also for the environment that the Eco-Olympics strives to protect.

2.0 Background

The residence Eco-Olympics is a relatively new sustainability initiative at Dalhousie University. In 2010, Gerard Hall won the first gold for their 5 per cent reduction in electricity and water consumption (The Dalhousie Student Life Experience, 2009). In proceeding years of the competition, reduction percentages decreased to about one per cent, across the board (Results, n.d.). While any reduction in the consumption of energy and water should always be commended, comparing these results to those in other regions of Atlantic Canada highlight how improvements can be made:

Figure 1.0 Results of 2011 Residence Energy Conservation Challenge

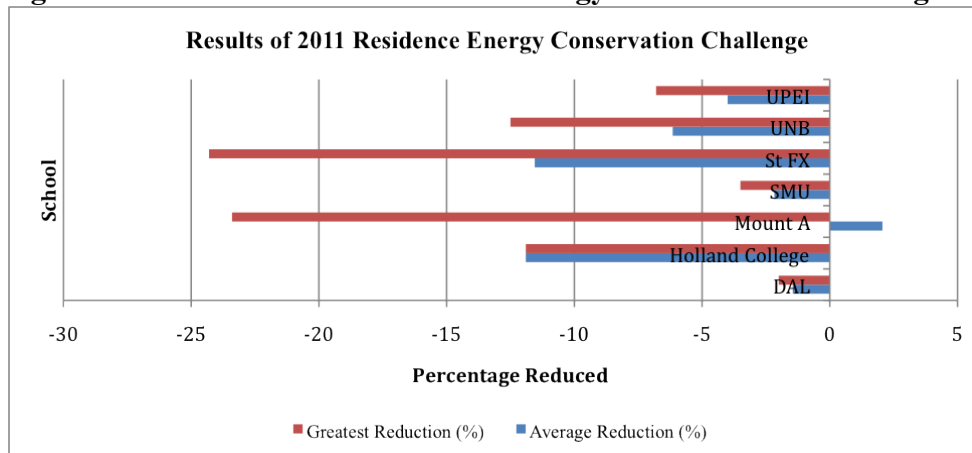


Figure 1: Energy consumption during reduction challenges. Comparisons are made between Saint Francis Xavier (St FX), University of Prince Edward Island (UPEI), University of New Brunswick (UNB), Saint Mary’s University (SMU), Mount Allison (Mount A), Holland College, and Dalhousie University (DAL).

The figure above highlights the results from the Atlantic Energy Conservation Challenge from 2011 (University of Prince Edward Island, 2011). From this chart, it is clear to see that Dalhousie Residences, on average, have the smallest percentage of reduction, as well as the smallest greatest reduction. From this it is fair to state that Dalhousie has ample room for improvement.

Through this research, reasons behind this trend will be explored to better understand how residences at Dalhousie University can create a thriving Eco-Olympics.

2.1 Existing Literature

Existing literature on the nature of sustainability activities in post-secondary institutions that influence this project can be grouped into three categories which correspond with the three themes of this project: reasons behind student participation in activities; effective means of communication to gain awareness; and measures of success.

2.1.1 Influences on Participation:

When looking at the reasons behind participation in activities in post-secondary school residences, researchers have looked in two directions. This can be in a positive direction (factors that contribute to participation), as well as negative (factors that hinder participation). Thus far in the social science community there has been a lack of consensus behind the positive and negative influences on participation.

Some research has pointed to reasons behind the negative influences on participation. Savageau (2013) found that lack of student participation in sustainability activities was because of the timing of events. Here, it was discovered that with a students busy schedule, and the stress placed on achieving high grades, students often prioritized academics over extra-curriculars. This research was supported by Reardon and Cummings Bertoch (2010) whom suggested that

students will show higher motivation and levels of participation in programs that more directly relate to their program of study or their career goals.

A second negative influence on participation, as stated by Savageau (2013), is that many students admitted to giving little thought to their consumption and waste patterns, and that when confronted about these matters, students said the issues felt distant and overwhelming. Various researchers have found the shift from a family home to a university residence is difficult for many first-year students (Tierney, 1992; Martin, 2003; Mantere & Vaara, 2008, Franz-Balsen et al., 2007). Due to this culture shock some students have a very difficult time participating in activities that force a different ethic than what was previously promoted in their homes. Mantere & Vaara (2008) suggest that one way to ease this is by increasing the role that residence assistants (RAs) have in residence activities.

Additional barriers were highlighted by Zimmerman & Halfacre-Hitchcock (2006) in a study performed at the College of Charleston, North Carolina. Here, numerous influences behind the lack of participation in sustainability oriented events in post-secondary institutions were uncovered, including stereotypes associated with activism, lack of coordination among campus community, as well as lack of time to implement the project (Gilman, 2001; Reardon & Cummings Bertoch, 2010).

While the research outlined above points to very few commonalities between positive and negative influences behind student participation, Doug McKenzie-Mohr, an expert in community based social marketing (CBSM) refutes the majority of these points. He claims that none of the tactics above work for increasing participation in sustainability oriented activities (2000). Rather his research has pointed to the idea that participation can be increased by determining what motivates the population, alongside establishing barriers and strategies through CBSM, is a key factor in influencing the mindset change towards participation in environmental activities (McKenzie-Mohr, 2000).

2.1.2 Communication Tools

In the post-secondary school setting, there are often multiple tools that are used for communication. These range from posters and pamphlets to floor meetings. Research in post-secondary school cafeterias have pointed to posters as being one of the best communication tools for conveying sustainable activities (Whitehair et al., 2013; Kahler, 2003). In these studies, it was found that when posters with simple prompts for sustainability related lifestyle choices are placed in high visibility places of the cafeteria, students were more likely to be reminded of their beliefs and positively contribute to the activity. On the other hand, Sharp (2002), as cited in Franz-Balsen, (2007) stated that top ways to communicate to students on campus is to “maximize face-to-face” communication and to update university websites frequently. Franz-Balsen (2007) also noted that a counter productive communication tactic is to over-campaign students. Rather, they believe that something as simple as updating the University website is effective in communicating the message.

2.1.3 Success Indicators:

Success indicators are defined as ways that students can recognize the positive impact they are having through their participation. Using this definition, success indicators can range from positive feedback from RAs to prizes to electronic meters with live updates. Again, while there is an ample amount of existing literature on the positive influences success indicators have on participation rates and success of a program, there is little consensus.

Research presented by Peterson *et al.*, (2007) stated there were two main kinds of feedback that students reacted positively to. First, it was concluded that real-time web based feedback as a positive impact with getting students involved. Energy waste was monitored and it was found that students who had access to this information were 51% more likely to participate. This information was validated further by Zimmerman & Halfacre-Hitchcock (2006) who found that students are less inclined to participate when real-time updates of progress are absent. Second, Peterson *et al.*, found that incentives (such as prizes) was a positive way get students involved (2007).

From the scan of literature in the field of sustainability initiatives in the post-secondary institutional setting it is clear to see that many social scientists have conflicting views about how to communicate, facilitate, and incentivize participation in 'green' activities. As a result, it is the goal of this project to find the context specific reasons on how the residence Eco-Olympics at Dalhousie University, Halifax can be more successful by using these three themes.

2.2 Implications of Study

There are several practical implications of this research study. First, from the results of the survey, the researchers will be able to synthesize what students living in Howe Hall deem as the most effective ways to get residents in residence involved. While this research is indeed to explain the reasons behind the lack of involvement in the Eco-Olympics, this same information can be applied to many activities, as questions in the survey are broad enough to cover multiple scenarios (see Appendix A and Appendix B for surveys).

It is anticipated that this research will lead to a better understanding of how the Eco-Olympics are currently run, as well as how they can be improved in the future. By understanding the influences of participation, communication tactics, and desired success indicators that first year students have, those who facilitate the Eco-Olympics may be able to modify events and incentives to increase the effect and noticeable results seen from this competition. If suggestions for how participation in Eco-Olympics, or even participation in the events can be slightly improved from this study, then the researchers would deem this project to be a success.

Looking at a broader scope, making the Eco-Olympics a greater success within residences has the potential to first decrease the footprint of Dalhousie University. In addition, success through student participation has the potential to install life-long lifestyle changes in the lives of first year students. In the words of Graham Carey, first year students have "malleable minds," and when they leave residence, "they'll have these skills and developed and hopefully keep applying them" (Hampson, 2010).

3.0 Research Methods

To study the research question defined in Section 1.0, the research team formulated both quantitative and qualitative methods to produce the most unbiased investigation possible, given the limitations of the research. Here, it has been decided that a survey with closed ended questions will be administered to first year students, and a survey with both closed ended questions, as well as one open ended question administered to residence assistants. This will be done in order to get the opinions of students who have not yet participated in the Eco-Olympics (first year students), as well as those who have (residence assistants).

3.1 Survey of first year residents of Howe Hall

The purpose of the student survey is to gain insight into the attitude and motivation associated with student participation in various residence activities, namely the Eco-Olympics. Furthermore, this survey aims to understand the level of student interest in environmental sustainability on campus.

The survey was formulated based on the pilot testing of 3 group members' individual surveys, with a final draft of the survey being compiled based on the questions which most effectively addressed the survey's purpose. The final student survey is included; see Appendix A.

After consulting with Melissa Mackay, Dalhousie University's Residence Life Manager, it was determined that the surveying of students would be conducted on Friday February 22nd (11:30am-1:30pm & 4:30pm – 6:30pm), Saturday February 23rd (4:30pm-6:30pm) and Sunday February 24th (11:30am-1:30pm). A sample population of 250 first year students will be randomly selected outside of the Howe Hall cafeteria doors to complete the survey. This location was chosen as it is an area with high student traffic, where a vast majority of these students are Howe Hall residents. Because of the high activity, this location is expected to provide a good representation of the Howe Hall population by using probabilistic techniques (Palys & Atchison, 2008).

Before participating in the survey, students will be asked whether they meet the survey criteria; whether they are 1) first year students, and 2) residents of Howe Hall. Provided that students meet the two listed criteria, they will be provided with a copy of the survey, and asked if they are interested in completing it. Willingness to complete the survey will be supplemented by offering free chocolate chip cookies, as well as the chance to win a sustainability gift basket. Once the survey has been completed, the student may take their cookie, and fill out a ballot which is placed in a box.

Survey questions will be a mix of rating questions, ranking questions, and linkert scale questions.

3.2 Survey of Howe Hall Residence Assistant (RA) staff

The purpose of the residence assistant survey primarily focuses on the reflection of past student participation in the Eco-Olympics competition, as well as potential improvements to increase participation rates in future Eco-Olympics.

The RA survey was formulated based on the pilot testing of 2 group members' individual surveys. Again, a final survey draft was compiled containing questions most related to the survey's purpose. The final RA survey is included; see Appendix B.

The process of RA surveying will differ from the student survey. Melissa Mackay will obtain the finalized survey from the research group and distribute the questions to all attending RAs, provided they have participated in a past Eco-Olympic competition either as a student or an RA. The completion of this RA survey will occur on March 4th, under the supervision of Melissa Mackay. Melissa will distribute the survey to the thirty-three RAs at the mandatory meeting, where each individual will be required to complete the survey. The completed surveys will then be collected the following week.

Survey questions will be a mix of rating questions, ranking questions, and linkert scale questions.

3.3 Data Analysis

After surveys have been completed, data for each survey will be collected, followed by

analysis. For closed end questions of both surveys, descriptive statistical methods will be used for analysis. For the open ended question in the RA survey (regarding potential changes and/or inclusions in future Eco-Olympics), a ground a posterior coding method will be used for opinion-based answer analysis (Palys & Atchison, 2008). This information will be coded using methods describe on Tuesday February 19, 2013 by Tarah Wright (personal communications, SUST 3502, February 19, 2013), and placed into an excel spreadsheet.

4.0 Schedule (See Figure 2)

February:

18: 9:30AM meeting with *Melissa Mackay* to determine student surveys (Matt, Julia, Sam)

22: Research proposal due (formatted and compiled by Julia; second edit by Gretchen, Matt and Sam, submitted by Julia)

22/23/24: Survey students living in Howe Hall (All group members)

Reading week: Place student survey results into Excel for later analysis (Split between group members).

March:

4: Survey RA's in Howe Hall at their meeting.

5: Pick up results from Melissa Mackay (9:30AM); place RA survey results into Excel for analysis

10: Draw for the sustainability gift basket will occur. Sam Maize will e-mail the winner to arrange a time for pick up.

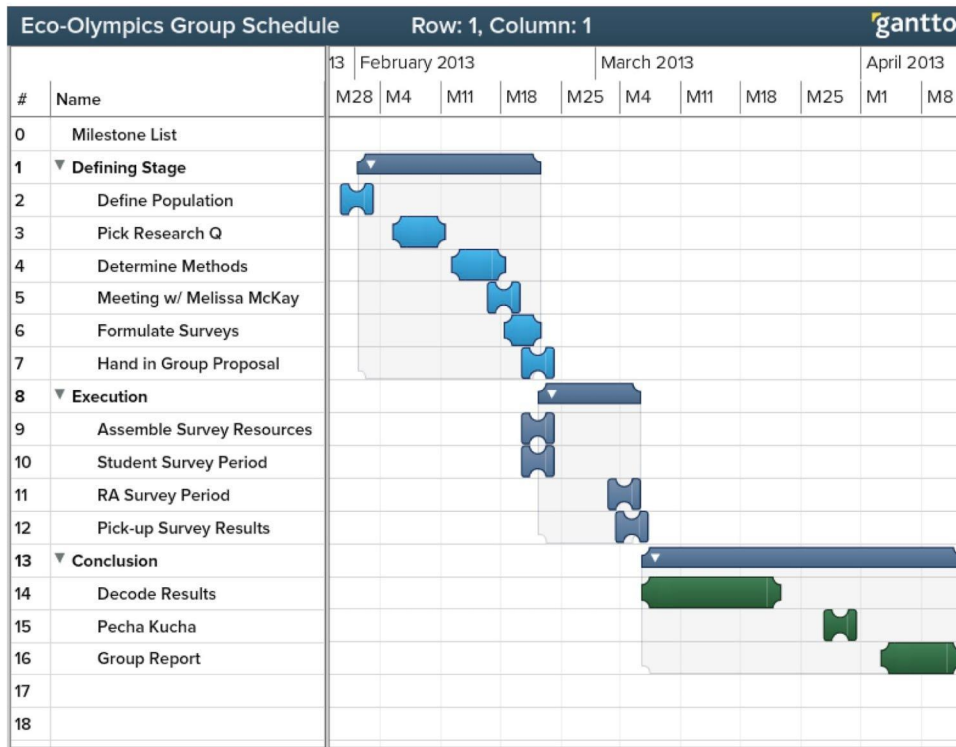
31: Pecha Kucha slides due

April:

2: Group presentation

12: Project report

Figure 2: Eco-Olympics Group Schedule



5.0 Budget

There is no budget for this research project. Rochelle Owen of the Office of Sustainability will donate all items of the sustainability gift basket. The Environmental Science department supplemented printing costs of the student surveys, while the printing costs of the RA surveys were covered by Melissa Mackay.

6.0 Deliverables and Communication Plan

There are two categories of deliverables for this project. On one hand, there will be the required documents that will be submitted for the class *Campus as a Living Lab*. These include a petcha-kucha style presentation that will be given on April 2nd at the Company House; and a detailed report that will succinctly outline the details of the entire research process. Beyond this, key residence stakeholders have expressed interest in attaining the results from both student surveys as well as the residence assistant surveys. For these actors, a summary report with any major findings may be available upon request. Upon request, a guide to participation in first year students can be constructed to share with any students who are interested in finding out the results.

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11.3 Appendix C: Appendix Aggregate Data

11.3.1 New Participant Survey Results

Q1-a) Community Day:

33 students yes (13.2%), 217 students no (86.8%)

Q1-b) Shinerama:

142 students yes (56.8%), 108 students no (43.2%)

Q1-c) Residence Charity Kick-Off:

115 students yes (46%), 135 students no (54%)

Q1-d) Change for Children:

11 students yes (4.4%), 239 students no (95.6%)

Q2-a) Community Day:

161=unaware (64.4%)

30=too busy (12%)

12=uninterested (4.8%)

14=friends didn't participate (5.6%)

33=I participated (13.2%)

Q2-b) Shinerama:

33=unaware (13.2%)

43=too busy (17.2%)

18=uninterested (7.2%)

14=friends didn't participate (5.6%)

142=I participated (56.8%)

Q2-c) Residence Charity Kick-Off:

80=unaware (32%)

31=too busy (12.4%)

19=uninterested (7.6%)

5=friends didn't participate (2%)

115=I participated (46%)

Q2-d) Change For Children:

203=unaware (81.2%)

21=too busy (8.4%)

8=uninterested (3.2%)

7=friends didn't participate (2.8%)

11=I participated (4.4%)

Q3) What do you believe is the most important reason for getting involved in residence activities? Please check only one

26= Residence Assistant (RA) attitude towards the activity/competition (10.4%)

52= Friends attitude towards the activity/competition (20.8%)

92= Personal interest in the nature of the activity/competition (36.8%)

32= How busy my own schedule is (12.8%)

37= Awareness of the activity (14.8%)
11= Convenient hours/time (4.4%)

Q4) Which method do you find most effective to gain awareness of activities happening in residence:

103= Posters (41.2%)
36= Emails (14.4%)
21=Floor meetings (8.4%)
34=Pamphlets under door (13.6%)
56=Social Media (22.4%)

Q5) State your level of interest in environmental sustainability on campus

15= Not interested (6%)
86=Slightly interested (34.4%)
97= Interested (38.8%)
52=Very Interested (20.8%)

Q6) What do you believe is the most important environmental sustainability topic on campus

63= Water (25.2%)
70=Energy (28%)
37= Food (14.8%)
17=Pollution (6.8%)
8=Transportation (3.2%)
55=Waste (22%)

Q7) At what time of the year do you believe is the best time to hold residence competitions

118=September (47.2%)
42=October (16.8%)
15=November (6%)
2=December (0.8%)
34=January (13.6%)
10=February (4%)
21=March (8.4%)
8=April (3.2%)

Q8) Are you more or less likely to participate in a residence activity if there is a prize?

232=Yes (92.8%)
18=No (7.2%)

Q9) Please rate each of the following prizes in order of which they appeal to you:

Q9-a) Bookstore gift cards

91=1 --- 36.4%
54=2
40=3
31=4
16=5

18=6

Q9-b) Pizza Party

47=1 --- 18.8%

58=2

63=3

38=4

24=5

19=6

1=7

Q9-c) Movie Night

14=1 --- 5.6%

32=2

47=3

68=4

56=5

32=6

1=7

Q9-d) Bragging Rights

10=1 --- 4%

18=2

27=3

41=4

51=5

99=6

4=7

Q9-e) Lounge Party

28=1 --- 11.2%

38=2

41=3

49=4

52=5

41=6

1=7

Q9-f) Champions T-Shirt

55=1 --- 22%

48=2

31=3

22=4

51=5

41=6

2=7

Q10) Have you heard about Eco-Olympics?

85 = yes (34%)

165 = no (66%)

11.3.2 Experienced Participant Survey Results

Q1) Have you ever participated in the Dalhousie residence Eco-Olympics?

4=Yes (14.8%)

23=No (85.2%)

Q2) From 1 (not very involved) to 5 (very involved), state your level of involvement in previous years Eco-Olympics

21=1 (77.8%)

4=2 (14.8%)

1=3 (3.7%)

1=4 (3.7%)

Q3) What do you think is the largest factor in lack of student participation in residence activities?

Check all that apply.

Q3-a) Lack of awareness of the activities

20=Yes (74.1%)

7=No (25.9%)

Q3-b) Busy/demanding school schedules

9=Yes (33.3%)

18=No (66.7%)

Q3-c) Disinterest in the subject matter of the activities

10=Yes (37%)

17=No (63%)

Q3-d) Lack of interest within friend group

14=1 (51.9%)

13=2 (48.1%)

Q3-e) Lack of Residence Assistant participation

1=1 (3.7%)

26=2 (96.3%)

Q4) What do you believe is the most important factor behind getting students involved in residence activities? Please check only one.

2= Residence Assistant (RA) attitude towards the activity/competition (7.4%)

10= Friends attitude towards the activity/competition (37%)

8= Personal interest in the nature of the activity/competition (29.7%)

1= How demanding school schedule is (3.7%)

4= Awareness of the activity (14.8%)

0= Convenient hours/time (0%)

2= Incentives (7.4%)

0= Increased Competition (0%)

0= Instant Feedback (0%)

Q5) Do you believe students currently living in Dalhousie residences are aware of the Eco-Olympics competition?

1= Did not answer (3.7%)

7= Yes (25.9%)

19= No (70.4%)

Q6) In previous years, rate how well the following components of the Eco-Olympics were facilitated (1 Poor - 5 Excellent):

Q6-a) Instant Feedback

7=0 (25.9%)

4=1 (14.85%)

3=2 (11.1%)

9=3 (33.3%)

4=4 (14.85%)

0=5 (0%)

0=6 (0%)

Q6-b) Incentives (prizes)

7= No Answer (25.9%)

1=1 (3.75%)

2=2 (7.4%)

8=3 (29.6%)

8=4 (29.6%)

0=5 (0%)

1=6 (3.75%)

Q6-c) Awareness

5= No Answer (18.5%)

6=1 (22.2%)

5=2 (18.5%)

9=3 (33.3%)

1=4 (3.75%)

0=5 (0%)

1=6 (3.75%)

0=7 (0%)

Q6-d) Participation

6= No Answer (22.25%)

5=1 (18.5%)

2=2 (7.4%)

12=3 (44.45%)

2=4 (7.4%)

0=5 (0%)

0=6 (0%)

Q6-e) Student interest

6=No Answer (22.25%)

6=1 (22.25%)

3=2 (11.1%)

9=3 (33.3%)

3=4 (11.1%)

0=5 (0%)

0=6 (0%)

Q6-f) RA interest

6= No Answer (22.2%)

1=1 (3.7%)

3=2 (11.1%)

11=3 (40.8%)

4=4 (14.8%)

2=5 (7.4%)

0=6 (0%)

Q6-g) Promotion

5= No Answer (18.5%)

3=1 (11.1%)

4=2 (14.8%)

11=3 (40.8%)

2=4 (7.4%)

2=5 (7.4%)

0=6 (0%)

Q7) Do you believe the Dalhousie residence Eco-Olympics, as it is currently run, has any long lasting effects on sustainable lifestyle choices of students living in residence?

5= No Answer (18.5%)

8= yes (29.6%)

14= no (51.9%)

Q8) question (#8):

-awareness

-greater prize incentives

-more info/advertising

-high traffic events – sports comps, fitness courses

-advertisement

-big group events where everyone is utilizing one room and hence only inerfy in that room is being used

-more big events

-more awareness and promotion

-more awareness, more people working on project, one person per building not enough, house council

-expanding influence through promotion

- students are more interested in council events than RA programs. Having council promote these events would better garner student interest
- more promotion, better events
- interest
- more advertising, events that appeal to a wider audience
- advertising
- less water consumption
- lights off when not in room, less water consumption
- more awareness and more updates about the event
- more prizes
- was unsure of time and place of events (lack of promotion)

11.4 Appendix D: Copy of New Participant Survey

STUDENT SURVEY ON PARTICIPATION IN RESIDENCE ACTIVITIES AND COMPETITIONS

Every year, residences put on several activities for students living in Howe Hall.

Have you participated in any of the following residence activities? Please check all that apply.

- Community Day (September)
- Shinerama (O-Week)
- Residence Charity Kick-off (Fall)
- Change for Children (December)

If you did not participate in ALL of the activities listed above, please specify why. Check top reason for each event.

	Community Day	Shinerama	Residence Charity Kick Off	Change for Children
I was unaware				
I was too busy				
I was uninterested				
None of my friends participated				
I participated in the event				

What do you believe is the most important reason for getting involved in residence activities? Please check only one.

- Residence Assistant (RA) attitude towards the activity/competition
- Friends attitude towards the activity/competition
- Personal interest in the nature of the activity/competition
- How busy my own schedule is
- Awareness of the activity
- Convenient hours/time
- Other (please specify): _____

Which method do you find most effective to gain awareness of activities happening in residence: (Please check only one).

- Posters
- Emails
- Floor meetings
- Pamphlets under door
- Social Media (Facebook or Twitter)
- Other _____

State your level of interest in environmental sustainability on campus (check only one):

- Not interested at all
- Slightly interested
- Interested
- Very Interested

What do you believe is the most important environmental sustainability topic on campus (please check one):

- Water
- Energy
- Food
- Pollution
- Transportation
- Waste

Other (please specify): _____

At what time of the year do you believe is the best time to hold residence competitions: (please check only one).

- September
- October
- November
- December
- January
- February
- March
- April

Are you more or less likely to participate in a residence activity if there is a prize?

- More likely
- Less likely

Please rate each of the following prizes in order of which they appeal to you:

(1 – very appealing, 7 – not appealing)

- Book store gift certificates
- Pizza party
- Movie night
- Bragging rights
- Lounge party
- A “Champions” tee shirt
- Other (please specify): _____

Have you heard about the Eco-Olympics in Dalhousie residences?

- Yes
- No

The following survey has been designed for students in their first year of living in Howe Hall to understand what motivates participation in residence activities.

If there are any questions, do not hesitate to contact Tarah Wright at tarah.wright@dal.ca.

11.5 Appendix E: Copy of Experienced Participant Survey

RESIDENCE ASSISTANT SURVEY ON PARTICIPATION IN RESIDENCE ECO-OLYMPICS

1. Have you ever participated in the Dalhousie residence Eco-Olympics?

Yes

No

2. From 1 (not very involved) to 5 (very involved), state your level of involvement in previous years Eco-Olympics:

1 2 3 4 5

3. What do you think is the largest factor in lack of student participation in residence activities? Check all that apply.

Lack of awareness of the activities

Busy/demanding school schedules

Disinterest in the subject matter of the activities

Lack of interest within friend group

Lack of Residence Assistant participation

Other (please specify): _____

4. What do you believe is the most important factor behind getting students involved in residence activities?

Please check only one.

Residence Assistant (RA) attitude towards the activity/competition

Friends attitude towards the activity/competition

Personal interest in the nature of the activity/competition

How demanding school schedule is

Awareness of the activity

Convenient hours/time

Incentives

Increased competition

Instant feedback

Other (please specify): _____

5. Do you believe students currently living in Dalhousie residences are aware of the Eco-Olympics competition.

Yes

No

6. In previous years, rate how well the following components of the Eco-Olympics were facilitated: (1 Poor - 5 Excellent).

COMPONENT	1- POOR	2	3	4	5	6- EXCELLENT
Instant Feedback						
Incentives (prizes)						
Awareness						

Participation						
Student interest						
RA interest						
Promotion						

7. Do you believe the Dalhousie residence Eco-Olympics, as it is currently run, has any long lasting effects on sustainable lifestyle choices of students living in residence?

Yes No

8. Briefly explain what you would be most interested in seeing changed or included in upcoming Eco-Olympics?

The following survey has been designed for Residence Assistants who have participated in Eco-Olympics. It has been designed to help the researchers understand what can improve participation rates for the competition. If there are any questions, do not hesitate to contact Tarah Wright at tarah.wright@dal.ca.